

DEPARTMENT OF FOOD AND AGRICULTURE



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July 15, 2003

Public Information and Records Integrity Branch (PIRIB)
Office of Pesticide Programs (OPP)
Environmental Protection Agency (7502C)
1200 Pennsylvania Avenue, N.W.
Washington, DC 20460-0001

Attention: Docket ID Number OPP-2003-0204

The United States Environmental Protection Agency (USEPA) issued a Federal Register Notice announcing the availability and opportunity for public comment on the notice "Zinc Phosphide: Notice of Filing a Pesticide Petition to Establish a Tolerance." The notice was issued on July 9, 2003, with a 30-day public comment period ending August 8, 2003.

Thank you for the opportunity to respond to the USEPA's notice entitled "Zinc Phosphide: Notice of Filing a Pesticide Petition to Establish a Tolerance." The California Department of Food and Agriculture would like to enter the following comments entitled "Comments of the California Department of Food and Agriculture on the USEPA's Zinc Phosphide: Notice of Filing a Pesticide Petition to Establish a Tolerance", into the public record.

If you have any questions please contact me at (916) 654-0768 or by e-mail at dschnabel@cdfa.ca.gov.

Sincerely,

Duane L. Schnabel, Senior Agricultural Biologist
Integrated Pest Control Branch
Plant Health and Pest Prevention Services

Enclosure

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Comments of the California Department of Food and Agriculture on the USEPA's Zinc Phosphide: Notice of Filing a Pesticide Petition to Establish a Tolerance

The California Department of Food and Agriculture (CDFA) would like to comment on an important issue facing the alfalfa hay growing industry in California. Yield loss and price variability caused by vertebrate pest infestations in alfalfa specifically from meadow voles (*Microtus sp.*) is a major economic concern to California alfalfa growers. Alfalfa is a major feed crop for the dairy and beef cattle, as well as other livestock industries in California. Alfalfa hay production in California (all counties) for 2002 is estimated at 7.3 million tons grown on 1 million acres with a value of 873 million dollars to California alfalfa growers. Even a 5% reduction in either yield or price has a detrimental impact on not only alfalfa growers, but also the California dairy and livestock industries. In 1998 the fiscal impacts of a severe vole infestation combined for a yield and price reduction of 16% in California alfalfa (all counties), resulting in a 134 million dollar revenue decline for alfalfa growers and sharp rise in price and imports to California for the dairy and livestock industries.

A survey of several University of California Cooperative Extension Farm Advisors was conducted after the CDFA was contacted by California Agricultural Commissioners who indicated that many of the growers in their counties were again experiencing vole damage in alfalfa during (2001/2002). Populations were estimated to range from 300 to 1,500 voles per acre, with yield reductions to individual fields ranging from 10% to 40% and hay quality reduced by 10%. Additionally, producers of other crops are experiencing damage due to immigration from meadow vole infested alfalfa fields.

The CDFA has invested considerable resources to find a solution to the problem. The CDFA has conducted food safety studies, efficacy studies and wildlife safety studies to document the safe and effective use of zinc phosphide to control meadow voles in alfalfa.

In 1998 and again in 2002 the CDFA requested and obtained a Section 18 Emergency Exemption for the use of zinc phosphide on alfalfa to control meadow voles. Currently a FIFRA Section 24(c) Special Local Need Registration with all appropriate documentation and data requirements has been submitted to The California Department of Pesticide Regulation. The 24(c) Special Local Need Registration submission in California is pending the establishment of a federal food tolerance. Unless a federal food tolerance is established for the use of zinc phosphide on alfalfa, a FIFRA registration will not be issued. Alfalfa growers in California will not have a viable means to control this economically devastating pest.

Therefore the CDFA supports the establishment of a federal food tolerance for the use of zinc phosphide on alfalfa.

DISCUSSION OF ECONOMIC LOSS***California Alfalfa Hay Production for Selected Counties****

Year	Acres Harvested 1,000	Yield/Acre Tons	Production 1,000 Tons	Price/Ton \$	Value \$ 1,000
1992	713	6.7	4777	80	382160
1993	682	6.6	4501	96	432096
1994	706	6.9	4871	103	501713
1995	691	6.3	4353	106	461418
1996	686	6.6	4528	107	484496
1997	698	6.8	4746	121	574266
1998	787	5.9	4643	103	478229
1999	799	6.4	5113	92	470396
2000	764	6.3	4813	94	452422
2001	727	6.3	4580	115	526700

* Data compiled by the California Agricultural Statistics Service.

** California counties where significant meadow vole populations are present: Alameda, Butte, Colusa, Contra Costa, Fresno, Glenn, Kern, Kings, Lassen, Madera, Merced, Modoc, Sacramento, San Joaquin, Shasta, Siskiyou, Solano, Stanislaus, Sutter, Tulare, Yolo, Yuba

**Estimated 2002 Revenues for Alfalfa Hay Production
With & Without the Use of Zinc Phosphide for Selected Counties****

	Acres Harvested	Yield/Acre Tons	Production Tons	Price/Ton \$	Value \$1,000
With Zinc Phosphide	725,000	6.5	4,713,000	102	480,726
W/Out Zinc Phosphide ***	725,000	5.9	4,276,000	92	393,392

** California counties where significant meadow vole populations are present: Alameda, Butte, Colusa, Contra Costa, Fresno, Glenn, Kern, Kings, Lassen, Madera, Merced, Modoc, Sacramento, San Joaquin, Shasta, Siskiyou, Solano, Stanislaus, Sutter, Tulare, Yolo, Yuba

***Estimated losses based on a 10% decline in alfalfa yield/acre and 10% price decline from reduced quality of alfalfa stand. The U.C. Cooperative Extension estimates individual alfalfa field losses from vole damage at 10% to 40%.

The data supports the argument that meadow vole damage to alfalfa in California is substantial. 1997 and 1998 were years in which the State of California experienced an increase in meadow vole populations. A comparison of 1997 to 1998 data indicate a general decline in yields per acre as well as a decline in price per ton. Yield and price declines can be attributed to many variables, including a decline in yields and quality from weather related crop performance, reductions in yield and quality from newly established alfalfa stands, decline in price from market saturation (previous years production and imports), and a yield and price decline attributed to meadow vole damage to alfalfa fields. For the selected counties identified for inclusion under this economic model, an overall economic loss (yield and price) for the 1997/1998, growing season is placed at \$96 million. This amount includes a net increase in farmed alfalfa acreage of 89,000 between 1997 and 1998. The \$96 million loss in 1998 represents a 17% loss based on 1997 revenues of \$574.3 million. Estimating what percentage of the economic loss that can be attributed to each variable is difficult. As previously stated an individual alfalfa field can sustain yield losses ranging from 10% to 40% and hay quality price reductions of 10%. Using this model, economic losses in 1998, sustained from meadow vole damage can be estimated at between \$19 million and \$48 million.

Employing the same economic model used above, an economic loss from vole damage in 2002/2003 can be estimated at between \$18 and \$45 million on an overall economic loss from all causes of \$89.5 million (17%) on 2001 revenues of \$526.7 million.

Other comments:

Large population fluctuations are characteristic of meadow voles. According to literature, a meadow vole is capable of conceiving 17 litters per year under laboratory conditions. Under field conditions, four (4) to six (6) litters are common. Reproduction may occur throughout spring and fall. Slight decreases in mortality and increases in litter size and number of litters can trigger population irruptions.

Each litter averages three (3) to six (6) offspring. A female is capable of producing offspring in 35 days. The gestation period is 21 days. Consequently, a breeding pair during a four (4) month period - assuming a 30 day gestation period and six (6) offspring per litter with an equal gender mix - will procreate 258 individuals. Even with a 90 percent mortality rate, 100 meadow voles are capable of producing 2,580 individuals in four (4) months.

An adult meadow vole weighs approximately 3.0 to 4.5 ounces. To sustain its metabolic requirements, a meadow vole must consume daily at least 51 percent of its body weight. Accordingly, a single meadow vole, assuming a body weight of 3.5 ounces, will consume 41 pounds of plant material a year. While seemingly insignificant in and of itself, the quantity foraged by even a moderate infestation (500 meadow voles per acre) is staggering - 20,360 pounds of plant biomass annually.

Meadow Voles feed both on the root system and the above ground portion of plants. During winter, feeding on root crowns can severely deplete a perennial alfalfa stand. Without the use of zinc phosphide, meadow voles will reduce the quality and quantity of alfalfa hay. Meadow voles reduce forage biomass, encourage weed invasion, reduce stand longevity, degrade hay quality, and reduce the price received.

Meadow voles can quickly devitalize a stand predisposing it to the invasion and establishment of weedy species. Some weeds, such as hare barley (foxtail), downy brome (cheatgrass), ripgut brome, and green foxtail (bristleglass), can injure the mouths of livestock, rendering the forage less palatable. Others, such as fiddleneck and the widespread yellow starthistle, are poisonous. If present in sufficient quantities, the forage is unsuitable for livestock consumption. The problematic *Poa* complex includes both annual and perennial species. Its robust, competitive nature displaces seedling alfalfa. Some weeds are subject to quarantine restrictions, resulting in hay that may not be transported or sold. Scotch thistle and a number of the knapweed species are A-rated (subject to eradication or holding actions) and occur in alfalfa hay growing regions of California. Quackgrass (*Agropyron repens*) is particularly troublesome and is not tolerated in hay exported to Japan. At the very least, the intrusion of weeds will necessitate supplementary applications of herbicides. In general, hay containing objectionable plants can incur a \$10 to \$50 per ton discount.

A high meadow vole population can reduce stand longevity by weakening the stand and allowing weed establishment in open areas. With establishment cost of \$534 per acre (based on a 1994 Washington State University Cooperative Extension enterprise budget), it is highly advantageous for a producer to perpetuate a stand. With annual production costs (including a prorated stand establishment charge) exceeding \$892 per acre (based on a U.C. Cooperative Extension enterprise budget), the financial integrity of farm operations can be readily compromised if the time frame in recapturing establishment costs is significantly condensed. A reduction in stand longevity intensifies soil erosion. Open ground (eg. devoid of vegetative cover) is exposed for longer periods to the erosive forces of wind and water.

A large-scale meadow vole population irruption occurred in 1957- 1958. Irrigated valleys in eastern Oregon, Idaho, northeastern California, Nevada and Washington were impacted. Over one million pounds of poison bait were sold (Beck, 1959). Severe impacts have been historically observed in alfalfa hay production in Nevada, which has growing conditions similar to those in northeastern California. In 1907-1908 the first recorded meadow vole outbreak in the United States occurred in Nevada. Approximately 15,000 acres of alfalfa were completely destroyed by meadow vole populations, which in some areas, reached thousands per acre (Piper, 1909). Jameson (1958) estimated that 100 meadow voles per acre would consume 1,000 pounds per acre of alfalfa in a seven-month growing season. Considering the history of meadow vole populations in California and historical impacts, a 40% reduction in alfalfa production is easily possible without control methods.

LITERATURE CITED

Beck, J. R. ed. 1959. The Oregon Meadow Mouse Irruption of 1957-1958. Coop. Ext. Serv. Oregon State College . Corvallis, Oregon. 88pages.

Jameson, W.L. 1958. Consumption of Alfalfa and Wild Oats by *Microtus californicus*. J. Wildlife Management, 22:433-435.

Piper, S.E. 1909. The Nevada Mouse Plague of 1907-1908. U.S.D.A. Farmers Bulletin No. 352.